

Commonwealth of Kentucky
Division for Air Quality
PERMIT STATEMENT OF BASIS

TITLE V (DRAFT) No. V-06-026 REVISION 1
E.I. DUPONT DE NEMOURS AND COMPANY
HC-66 400 HARRIS ROAD, WURLAND, KY 41144

MAY 5, 2007

CAROLINA ALONSO, REVIEWER
SOURCE I.D. #: 021-089-00001
SOURCE A.I. #: 1589
ACTIVITY #: APE20070001

SOURCE DESCRIPTION:

E.I. DuPont De Nemours and Company (DuPont) located in Wurtland, Kentucky, produces sulfuric acid, oleum, sulfur trioxide (SO₃), chlorosulfonic acid (CSA), and SO₃/CSA blend. The source is a major source, as defined by 401 KAR 52:020 Title V Permits, for the potential emissions of over 100 tons per year of sulfur dioxide (SO₂), and particulate matter less than 10 microns (PM₁₀). The source has several construction and state origin permits and has applied for a source wide Title V permit. The source is also a major source as defined in 401 KAR 51:001 for Prevention of Significant Deterioration of the Air Quality (PSD), however permit V-06-026 is not subject to PSD review. Significant emission points are described below.

Sulfuric Acid Production Process (EP 01):

The primary emission unit at the DuPont Wurtland facility is the sulfuric acid (H₂SO₄) production process. This process converts sulfur (S) to sulfur dioxide (SO₂), and then sulfur dioxide is converted to sulfur trioxide (SO₃) in the converter. SO₃ is then absorbed in H₂SO₄ in a series of absorbing towers. The sulfuric acid production process include the blower/turbine, dry tower, sulfur burner (natural gas), boiler #1, converter, boiler #2, superheater #1, superheater #2, economizer, oleum tower, absorbing tower, demister, and stack. Fugitive emissions from the acid production process may be emitted from 250 liquid valves, 25 pump seals, 10 relief devices, 1,500 liquid flanges, 1,500 vapor flanges, and 2 sample stations (listed as insignificant).

Oleum Storage and Barge Loading (EP 02):

The DuPont Wurtland Sulfuric Acid Plant operates three tanks used for storing oleum and one oleum barge loading area (not currently in use). Oleum is a solution of SO₃ in H₂SO₄. Two oleum storage tanks, identified as tanks #6 and #7, contain 65% oleum and one tank contains SO₃. The 65% oleum and SO₃ is loaded into rail cars and truck trailers. The facility is capable of loading oleum into rail cars at 5 locations and into truck trailers at one location.

Emergency Boiler (EP 03):

When the sulfuric acid production process is shut down or during an emergency, the emergency boiler is operated to prevent the molten sulfur (and other temperature sensitive materials) being fed to the process from solidifying in the process pipes and causing severe damage. The emergency boiler is also run occasionally to assure that it will be operational in the event of an emergency. The packaged boiler is fired by natural gas and has a heat output rating of 29.25 mmBtu/hr.

Chlorosulfonic Acid Reactor (EP 04):

The DuPont Wurtland facility produces chlorosulfonic acid (CSA) by the continuous reaction of anhydrous hydrogen chloride (HCl) with SO₃ in the CSA reactor. The reactor is capable of producing 106 tons of CSA per day.

Chlorosulfonic Acid Storage Tanks (EP 05 and EP 08):

The DuPont Wurtland facility owns three CSA storage tanks. CSA tanks #1 and #2 are permitted as emission point #05 and have capacities of approximately 13,000 gallons each. CSA tank #3 is has a capacity of approximately 210,000 gallons is identified as emission point #08 (listed as insignificant activity).

Chlorosulfonic Acid Loading Facility (EP 06):

Chlorosulfonic acid is loaded at five locations into rail cars and at one location into truck trailers.

Sulfuric Acid Bulk Storage Tanks (EP 07):

The DuPont Wurtland facility owns three tanks for storing non-fuming sulfuric acid. The tanks are identified as #5, #8, and #10.

CSA/SO₃ Blend Reactor (EP 09):

The DuPont Wurtland facility produces a CSA and SO₃ blend product in a 2,500-gallon capacity glass lined vessel known as the CSA/SO₃ blend reactor. The blend is produced in the reactor in batches. The process begins with the loading of CSA into the reactor. The reactor is then closed and the CSA is re-circulated while SO₃ is injected into the reactor via an eductor.

Blend Reactor Pipeline Equipment (EP 10):

The pipeline equipment, such as flanges and valves, associated with the CSA/SO₃ blend reactor are permitted as point 10. There are 32 liquid valves, 1 relief device, and 92 liquid flanges. This is an insignificant activity.

MINOR PERMIT REVISION FOR lower SO₂ limit:

As a result from a consent decree between DuPont and EPA, the V-06-026 limit for SO₂ emissions of 27.6 pounds per ton of acid produced is replaced by a lower limit of 21 pounds per ton of acid produced, the production being expressed as 100 percent sulfuric acid. The resultant SO₂ potential emissions from the facility were reduced from 3,485 tpy to 2,991 tpy. The emission limit, 2.b., on page 3 in permit V-06-026 Revision 1, was modified to reflect the lower limit.

COMMENTS:

NA

EMISSION AND OPERATING CAPS DESCRIPTION:

NA

PERIODIC MONITORING:

Pursuant to 401 KAR 61:005, General Provisions, the owner or operator shall install, calibrate, maintain, and operate a continuous monitoring system (CMS) for SO₂ emissions.

OPERATIONAL FLEXIBILITY:

NA

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.